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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,131	10/16/2003	Yanfeng Du	134431	7352
41838	7590	03/08/2005	EXAMINER	
GENERAL ELECTRIC COMPANY (PCPI)			HO, ALLEN C	
C/O FLETCHER YODER			ART UNIT	
P. O. BOX 692289			PAPER NUMBER	
HOUSTON, TX 77269-2289			2882	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/687,131	Applicant(s) DU ET AL.	
	Examiner Allen C. Ho	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12, 15-19 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 13, 14, 20, 21, 26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>102003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 106, 302, 306, 308. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:
Paragraph [0043], line 11, "Fig. 3" should be replaced by --Fig. 6--.
Appropriate correction is required.

Claim Objections

3. Claims 16-27 are objected to because of the following informalities: Claims 16-27 recite both the structure of an apparatus and method steps of using the apparatus. It is unclear whether an apparatus or a method is being claimed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5, 8-12, 15-19, and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Iatrou *et al.* (U. S. Pub. No. 2004/0136491 A1).

With regard to claims 1, 2, and 5, Iatrou *et al.* disclosed a method for analyzing materials in an object, comprising: acquiring x-ray projection data of the object at high energy (72) and at low energy (74) for a plurality of views; utilizing the acquired x-ray projection data in a material decomposition to determine material densities at each pixel for two selected basis materials (paragraph [0030]); determining a composition of an object at each pixel utilizing a determined mapping of material density regions for the two selected basis material (paragraphs [0034]-[0035]); and displaying an image indicative of the composition of the object utilizing the determined composition (paragraph [0030]).

With regard to claims 8, 9, and 12, Iatrou *et al.* disclosed a method for analyzing materials in an object, comprising: acquiring x-ray projection data of the object at high energy (72) and at low energy (74) for a plurality of views; utilizing the acquired x-ray projection data in a material decomposition to determine material densities at each pixel for two selected basis materials (paragraph [0030]); utilizing a determined mapping of material density regions for the two selected basis materials (paragraphs [0034]-[0035]), filtering pixels of an image of the object corresponding to one or more compositions of interest (pixels are filtered according to their composition); and displaying an image indicative of the locations of composition of interest of the object (paragraph [0030]).

With regard to claims 3 and 10, Iatrou *et al.* disclosed a method in accordance with claims 1 and 8, further comprising performing a table lookup (paragraphs [0034]-[0035]).

With regard to claims 4 and 11, Iatrou *et al.* disclosed a method in accordance with claims 1 and 8, wherein the selected materials are water and iodine (paragraph [0033]).

With regard to claim 15, Iatrou *et al.* disclosed a method in accordance with claim 8, wherein the image comprises an image indicative of locations of blockage in the blocked lumen (110).

With regard to claims 16, 17, 19, 22, 23, and 25, Iatrou *et al.* disclosed an apparatus for analyzing materials in an object, comprising: an x-ray source (14); a detector (18); a computer (36) configured to determine material densities at each pixel for two selected basis materials; a storage (38); and a display (42).

With regard to claims 18 and 24, Iatrou *et al.* disclosed an apparatus in accordance with claims 16 and 22, wherein the computer is configured to perform a table lookup (paragraphs [0034]-[0035]).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-5, 8-12, 15-19, and 22-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4, 12, 15-18, and 24 of copending Application No. 10/625,437. Although the conflicting claims are not identical, they are not patentably distinct from each other.

U. S. Application No. 10/625,437 claims a method for analyzing materials in an object, comprising: acquiring x-ray projection data of the object at high energy and at low energy for a plurality of views (claims 3 and 4); utilizing the acquired x-ray projection data in a material decomposition to determine material densities at each pixel for two selected basis materials (claims 4 and 6); determining a composition of an object at each pixel utilizing a determined mapping of material density regions for the two selected basis material (claims 4 and 6); and displaying an image indicative of the composition of the object utilizing the determined composition (claim 12).

U. S. Application No. 10/625,437 claims an apparatus for analyzing materials in an object, comprising: an x-ray source (claim 15); a detector (claim 15); a computer (claim 15) configured to determine material densities at each pixel for two selected basis materials (claims 16-18); a storage (inherent for a computer); and a display (claim 24).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

8. Claims 6, 7, 13, 14, 20, 21, 26, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 6, 13, 20, and 26, although the prior art discloses determining a composition of an object at each pixel utilizing a predetermined mapping of material density regions for the two preselected materials, it fails to teach or fairly suggest determining which of a

plurality of rectangular regions in a Cartesian coordinate system contains the determined material densities and selecting the determined composition in accordance with the determined rectangular region as claimed.

With regard to claims 7, 14, 21, and 27, although the prior art discloses determining a composition of an object at each pixel utilizing a predetermined mapping of material density regions for the two preselected materials, it fails to teach or fairly suggest determining a ratio of the determined material densities and selecting the determined composition in accordance with the ratio as claimed.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- (1) Karau *et al.* (U. S. Patent No. 6,813,333 B2) disclosed methods and apparatus for detecting abnormalities.
- (2) Wu *et al.* (U. S. Pub. No. 2004/0184574 A1) disclosed method and apparatus for generating a density map using dual-energy CT.
- (3) Flohr *et al.* (U. S. Patent No. 6,735,273 B2) disclosed an x-ray CT apparatus and multi-spectra correction.
- (4) Mazess *et al.* (U. S. Patent No. 6,597,759 B2) disclosed method of inspecting meat for bone content using dual-energy x-ray attenuation.
- (5) Adrizznsz (U. S. Patent No. 6,574,302 B2) disclosed method and system for determining a density of a volume in an image data set.

- (6) Pelc (U. S. Patent No. 5,485,492) disclosed reduced field-of view CT system for imaging compact embedded structures.
- (7) Pelc (U. S. Patent No. 5,253,282) disclosed a system for selective material imaging.
- (8) Ohtsuchi *et al.* (U. S. Patent No. 5,247,559) disclosed a substance quantitative analysis method.
- (9) Picard *et al.* (U. S. Patent No. 5,123,037) disclosed a method for calibrating the measuring system of an x-ray apparatus.
- (10) Macovski (U. S. Patent No. 4,686,695) disclosed a scanned x-ray selective imaging system.
- (11) Alvarez *et al.* (U. S. Patent No. 4,029,963) disclosed an x-ray spectral decomposition imaging system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho
Primary Examiner
Art Unit 2882

02 March 2005